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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/549,383	09/15/2005	Pertti Lintunen	AWEK 3301	5399
7812	7590	01/25/2008		
SMITH-HILL AND BEDELL, P.C. 16100 NW CORNELL ROAD, SUITE 220 BEAVERTON, OR 97006			EXAMINER BREVAL, ÉLMITO	
			ART UNIT 2889	PAPER NUMBER
			MAIL DATE 01/25/2008	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/549,383	<b>Applicant(s)</b> LINTUNEN ET AL.	
	<b>Examiner</b> Elmito Breval	<b>Art Unit</b> 2879	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 15 September 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters; prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 9-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 9-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 September 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>02/02/2006</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Response to Amendment***

The preliminary amendment filed on 09/15/2005 has been entered.

### ***Claim Objections***

Claim 13 is objected to because of the following informalities: "material strength" should be "material thickness" as stated in the specification. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 9-13** are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishiguro et al., (hereinafter "Ishiguro")(US. Pub: 2002/0055318) in view of Yamaguchi et al., (hereinafter "Yamaguchi")(US. Patent: 3,803,892).

**Regarding claim 9**, Ishiguro discloses (in at least fig. 1) a spark plug for an internal combustion engine having at least two electrodes (30, 40), in which the electrodes are formed of a first part (10; [0049]) made of substrate material and a surface part (60; [0053]) more durable than the substrate material, wherein the surface part (60) is fastened to the first part (10) via an intermediate part (40), and that the joint between the surface part (60) and the intermediate part (40), but fails to explicitly

disclose that joint between the surface part (60) and the intermediate part (40) is an explosion welding joint.

However, Yamaguchi teaches a spark plug wherein explosion welding process are used to form the parts (col. 2, lines 17-18) because explosion welding makes it possible to join together almost all metals or alloys used industry with a high durability of the joints, and also, explosion welding allows joining metals with different physico-mechanical properties, for example, low-melting metals and alloys with steel and other refractory materials, which is difficult to achieve by other method.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the explosion welding as taught by Yamaguchi into the device of Ishiguro because explosion welding makes it possible to join together almost all metals or alloys used industry with a high durability of the joints, and also, explosion welding allows joining metals with different physico-mechanical properties, for example, low-melting metals and alloys with steel and other refractory materials, which is difficult to achieve by other method.

**Regarding claim 10**, Ishiguro discloses the spark plug according to claim 9, wherein the surface part is formed of at least one metal of the Pt group (Pt, Pd, Ir, Ru, Os) or an alloy thereof ([0054]).

**Regarding claim 11**, Ishiguro discloses (in at least fig. 8) the spark plug according to claim 9, wherein the joint between the surface part (60) and the intermediate part (40) is essentially homogenous on the whole surface area of the joint (figs. 1, 2a, and 2c).

**Regarding claim 12**, Ishiguro discloses (in at least fig. 2c) the spark plug according to claim 11, wherein the joint between the substrate material part of the first part (10) and the intermediate part (40) is a conventional melt welding joint ([0061]).

**Regarding claim 13**, Ishiguro discloses (in at least figs. 1 and 6) the spark plug according to claim 9, wherein the material thickness of the surface part (60) perpendicular to the joint surface of it and the intermediate part (40) is 0.05- 2 mm ([0072] and [0073]).

**Claim 14-16** are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsutani (US. Pat: 5395273) in view of Yamaguchi et al., (hereinafter "Yamaguchi")(US. Patent: 3,803,892).

**Regarding claim 14**, Matsutani discloses (in at least fig. 3) a spark plug for an internal combustion engine having at least two electrodes (1, 4), in which the electrodes are formed of a first part (fig. 1, item 2) made of substrate material and a surface part (fig. 3, item 13) more durable than the substrate material, characterized by the following combination of production stages, in which a blank is formed (abstract; col. 1, line 41), comprising a the surface part (fig. 3, item 13) and an intermediate part (fig. 3, item 1), by joining the surface part (fig. 3, item 13) to the intermediate part (fig. 3, item 1), a part with is a suitable form is separated from the blank (fig. 3) to form the electrode of the spark plug, and the part separated from the blank is fastened to the first part (fig. 1, item 2) of the spark plug so that the joint is made between the said first part (fig. 1, item 2) of the spark plug so that the joint is made between the said first part (fig. 1, item 2) and the

intermediate part (fig. 3, item 1), the surface part (fig. 3, item 13) and the intermediate part (fig. 3, item 1), but silent about the parts are joined by means of explosion welding.

However, Yamaguchi teaches a spark plug wherein explosion welding process are used to form the parts (col. 2, lines 17-18) because explosion welding makes it possible to join together almost all metals or alloys used industry with a high durability of the joints, and also, explosion welding allows joining metals with different physico-mechanical properties, for example, low-melting metals and alloys with steel and other refractory materials, which is difficult to achieve by other method.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the explosion welding as taught by Yamaguchi into the device of Ishiguro because explosion welding makes it possible to join together almost all metals or alloys used industry with a high durability of the joints, and also, explosion welding allows joining metals with different physico-mechanical properties, for example, low-melting metals and alloys with steel and other refractory materials, which is difficult to achieve by other method.

**Regarding claim 15**, Matsutani discloses (in at least fig. 3) according to claim 14, wherein the surface part of the blank is formed of a planar piece consisting of at least one metal of the Pt group or an alloy thereof (abstract; col. 2, lines 40-41; fig. 3), but fails to expressly disclose the piece being explosion welded to the intermediate piece of also planar.

However, Yamaguchi teaches a spark plug wherein explosion welding process are used to form the parts (col. 2, lines 17-18) because explosion welding makes it

possible to join together almost all metals or alloys used industry with a high durability of the joints, and also, explosion welding allows joining metals with different physico-mechanical properties, for example, low-melting metals and alloys with steel and other refractory materials, which is difficult to achieve by other method.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the explosion welding as taught by Yamaguchi into the device of Ishiguro because explosion welding makes it possible to join together almost all metals or alloys used industry with a high durability of the joints, and also, explosion welding allows joining metals with different physico-mechanical properties, for example, low-melting metals and alloys with steel and other refractory materials, which is difficult to achieve by other method.

**Regarding claim 16**, Matsutani discloses (in at least fig. 3) a method according to claim 15, the surface part of the blank is formed of powder consisting of at least one metal of the Pt group or an alloy thereof (col. 1, line 41; col. 3, lines 39-40), the powder being simultaneously solidified and joined to the intermediate piece (col. 3, lines 1-12), but silent about parts are joined by means of explosion welding.

However, Yamaguchi teaches a spark plug wherein explosion welding process are used to form the parts (col. 2, lines 17-18) because by using explosion welding it is possible to join together almost all metals or alloys used industry with a high durability of the joints, and also, explosion welding allows joining metals with different physico-mechanical properties, for example, low-melting metals and alloys with steel and other refractory materials, which is difficult to achieve by other method.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the explosion welding as taught by Yamaguchi into the device of Ishiguro because explosion welding makes it possible to join together almost all metals or alloys used industry with a high durability of the joints, and also, explosion welding allows joining metals with different physico-mechanical properties, for example, low-melting metals and alloys with steel and other refractory materials, which is difficult to achieve by other method.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Gruber et al., (US. Patent: 5,369,328).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elmito Breval whose telephone number is 571-270-3099. The examiner can normally be reached on M-F (8:30 AM-5:00 Pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Toan Ton can be reached on (571)-272-2303. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



Application/Control Number:  
10/549,383  
Art Unit: 2879

Page 8

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January 15, 2008  
Examiner  
Elmito Breval

/Joseph Williams/  
Primary Examiner